

CLAIMS:

1. Method of reconstructing coherent scatter computed tomography (CSCT) data of an object of interest, the method comprising the steps of: acquiring attenuation data of the object of interest from primary radiation transmitted through the object of interest; performing a beam hardening compensation of scatter radiation data on the basis of the acquired attenuation data; wherein the scatter radiation data is based on scatter radiation scattered from the object of interest; and reconstructing the coherent scatter computed tomography data by using the compensated scatter radiation data.
2. The method of claim 1, wherein a compensating of a beam hardening effect is performed on the basis of an energy shift determined on the basis of an equivalent object; wherein the energy shift occurring with the equivalent object caused by the beam hardening effect is known.
3. The method of claim 1, further comprising the steps of: determining a mean attenuation caused by the object of interest on the basis of the attenuation data; determining an equivalent thickness of a pre-selected first material on the basis of the mean attenuation; determining an energy shift on the basis of the equivalent thickness of the pre-selected first material; and compensating the scatter radiation data by using the energy shift.
4. The method of claim 1, further comprising the steps of: reconstructing a volume data set comprising absorption coefficients of the object of interest; determining radiation spectra for scattered photons of the scatter radiation; determining mean energies of the scattered photons on the basis of the radiation spectra; and performing a reconstruction of the coherent scatter computed tomography data by using the mean energies.

5. The method of claim 1, wherein, on the basis of the attenuation data, a second material is determined which is located on a path of a scattered photon of the scatter radiation in the object of interest; wherein an absorption spectrum of the second material is used for determining a mean energy of the scattered photon; and wherein the mean energy is used for the reconstruction.

6. Coherent scatter computed tomography apparatus, the apparatus comprising: a detector assembly (1, 4, 15, 30, 34) with a source of radiation (4), a first detector (15) and a second detector (30, 34); wherein the detector assembly is arranged for rotation around an object of interest (7); wherein the first and second detectors are arranged opposite to the source of radiation; wherein the first detector is arranged for acquiring attenuation data of the object of interest from primary radiation transmitted through the object of interest; wherein the second detector is arranged for acquiring scatter radiation data of the object of interest from scatter radiation scattered from the object of interest; wherein the apparatus performs a beam hardening compensation of scatter radiation data on the basis of the acquired attenuation data; and wherein the apparatus performs a reconstruction of coherent scatter computed tomography data by using the compensated scatter radiation data.

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7. The apparatus of claim 6, wherein the compensating for the beam hardening effect is performed on the basis of an energy shift determined on the basis of an equivalent object, the beam hardening of which is known.

8. The apparatus of claim 6, wherein, on the basis of the attenuation data, a second material is determined which is located on a path of a scattered photon of the scatter radiation in the object of interest; wherein an absorption spectrum of the second material is used for determining a mean energy of the scattered photon; and wherein the mean energy is used for the reconstruction.

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9. Data processing device for reconstructing coherent scatter computed

- tomography data of an object of interest (7), wherein the device comprises a memory (52) for storing attenuation data and scatter radiation data; and a data processor (51) adapted to perform the following operation: acquiring attenuation data of the object of interest from primary radiation transmitted through the object of interest; performing a
- 5 beam hardening compensation of scatter radiation data on the basis of the acquired attenuation data; wherein the scatter radiation data is based on scatter radiation scattered from the object of interest; and reconstructing the coherent scatter computed tomography data by using the compensated scatter radiation data.
- 10 10. Computer program for reconstructing coherent scatter computed tomography data of an object of interest (7), wherein, when the computer program is executed on one of a data processor and a coherent scatter computed tomography apparatus, the following operation is executed: acquiring attenuation data of the object of interest from primary radiation transmitted through the object of interest; and
- 15 performing a beam hardening compensation of scatter radiation data on the basis of the acquired attenuation data; wherein the scatter radiation data is based on scatter radiation scattered from the object of interest; and reconstructing the coherent scatter computed tomography data by using the compensated scatter radiation data.